**3M™ Detcon™ Model FP-700**
Combustible Gas Sensor

**Description**

Detcon Model FP-700 is a non-intrusive “Smart” sensor designed to detect and monitor combustible gases in air over the range of 0-100% LEL using catalytic bead sensor technology. The plug-in, field replaceable detector is poison-resistant and features oversized gold-plated connections that help prevent corrosion. The FP-700’s rugged framework includes an electro-polished 316 stainless steel housing with fully encapsulated electronics and dual layer surge protection. This innovative design virtually eliminates sensor failure due to water ingress, corrosion, vibration, and transient spikes. A primary feature of the Model FP-700 is embedded intuitive software that simplifies operator interface by guiding the user through routine calibration, configuration, and fault diagnostic functions using a built-in alpha/numeric display. The Model FP-700 is equipped with standard analog 4-20mA, and Modbus™ RS-485 outputs. Among its unique features is a wireless option that can be used with Detcon’s SmartWireless® product line. Additional integration options include a Remote Alarm Module (RAM), and HART. Detcon’s combustible gas sensor has an infinite shelf life and is supported by a 2-year warranty.

**Applications**

- Oil and Gas Drilling Rigs
- Oil and Gas Production Sites
- Offshore Production Platforms
- FPSOs
- LNG/CNG Plants
- Refining and Petrochemical
- Pulp and Paper Mills
- Waste Water Treatment Plants

**Features**

- **Failsafe User-Friendly Interface**
  - LED Display (With Antiglare Cover)
  - Full Text Display Method
  - Non-intrusive Interface
  - Auto Zero/Auto Span
  - Pre-emptive Fault Diagnostics

- **Environmentally Bulletproof**
  - Electropolished 316SS Construction
  - 100% Epoxy Encapsulated Circuitry
  - Bulletproof I/O Protection
  - Water-Proof, Corrosion-Proof, Vibration-Proof

- **Modular and Serviceable**
  - Modular Design
  - Plug and Play Components
  - Quick Thread Release (For Sensor Replacement)
  - Integral Calibration Port
System Specifications

Sensor Type
- Continuous diffusion/adsorption
- Matched-pair catalytic bead detector
- Plug-in field replaceable

Sensor Life
- 3 to 5 years typical

Measurement Range
- 0-100% LEL (lower explosive limit)

Accuracy/Repeatability
- ±3% 0-50% LEL; ±5% 50-100% LEL

Response/Clearing Time
- T50 <10 seconds; T90 <30 seconds

Zero Drift
- <5% per year

Outputs
- Linear 4-20 mA DC
- RS-485 MODBUS-RTU

Electrical Classification
- Explosion proof
- cCSAus
- Class I, Division 1, Groups B, C, D (Tamb = -40°C to +75°C)
- Class I, Zone 1, Group IIb+IIH2
- ATEX
- II 2 G Ex d IIB + H2 T4 Gb (Tamb = -40°C to +70°C)

Ingress Protection
- NEMA 4X, IP66

Safety Approvals
- cCSUs Performance to ANSI/ISA 60079-29-1 (12.13.01)-2013 and CSA 22.2 #152
- ATEX
- CE Marking
- SIL2 Certified to IEC 61508

Warranty
- Plug-in detector - 2 years
- Transmitter - 2 Years

Environmental Specifications

Operating Temperature Range
- -40°F to +167°F; -40°C to +75°C

Storage Temperature Range
- -40°F to +167°F; -40°C to +75°C

Operating Humidity Range
- 0-99% RH non-condensing

Specifications subject to change without notice

Order Guide

Specify junction box options (below)
PN 967-525520-100 FP-700 Sensor Assembly (no junction box)
PN 967-525520-100 FP-700 Sensor Assembly with Aluminum Junction Box
PN 967-525420-100 FP-700 Sensor Assembly with 316 SS Junction Box
PN 9H7-525250-100 FP-700 Sensor Assembly with HART in Aluminum Junction Box
PN 9H7-525420-100 FP-700 Sensor Assembly with HART in 316SS Junction Box
PN 9R7-524520-100 FP-700 Sensor Assembly with RAM in Aluminum Junction Box
PN 9R7-524520-100 FP-700 Sensor Assembly with HART in 316SS Junction Box

Mechanical Specifications

Dimensions
- 7"H x 2.2" Dia.; 178mmH x 65mm Dia.
  (sensor assembly only)
- 11"H x 6.1"W x 3.75"D; 280mmH x 155mmW x 96mmD
  (with junction box)
- Mounting holes (J-box) 5.5"; 140mm center to center

Weight
- 2 lbs; 0.907kg (sensor only)
- 6 lbs; 2.72kg (w/aluminum j-box)
- 9 lbs; 4.08kg (w/stainless steel j-box)

Electrical Specifications

Power Input
- 11-30 VDC

Power Consumption
- Normal operation = 68mA (<1.7 watt)
- Maximum = 85mA (2 watts)

Inrush Current
- 1.0A @ 24V

RFI/EMI Protection
- Complies with EN50270

Analog Output
- Linear 4-20mA DC (1,000 ohms max loop load @ 24VDC)
- 0mA All Fault Diagnostics
- 2mA In-Calibration
- 4-20mA 0-100% full-scale
- 22mA Over-range condition

Serial RS-485 Output
- RS-485 Modbus™ RTU

Baud Rate
- 9600 BPS (9600,N,8,1 Half Duplex)

Status Indicators
- 4-digit LED display with gas concentration
- Full-script menu prompts for AutoSpan, Set-up Options, and Fault Reporting

Faults Monitored
- Operating Temperature, Loop, Input Voltage, Bridge Voltage, Zero, Sensor, Processor, Memory, Calibration

Cable Requirements
- Power/Analog
  - 3-wire shielded cable
  - Maximum distance is 13,300 feet with 14 AWG

Serial Output
- 2-wire twisted-pair shielded cable specifically for use with RS-485 installations
- Maximum distance is 4,000 feet to last sensor

I/O Protection
- Over-voltage, Miswiring, EMI/RFI Immunity

Integration Options

Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)
Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)
Wireless Integration Module (Detcon Model RXT-320 SmartWireless® Transceivers)